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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,277	06/27/2003	Christof Kindervater	HOE-492.1	8511

20028 7590 05/08/2006

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EXAMINER	
AFTERGUT, JEFF H	
ART UNIT	**PAPER NUMBER**
1733	

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,277	KINDERVATER, CHRISTOF	
	Examiner	Art Unit	
	Jeff H. Aftergut	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-98* is/are pending in the application.

4a) Of the above claim(s) *1-34,36-41,79-92 and 98* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35,42,46-72 and 76-78* is/are rejected.

7)☒ Claim(s) *43-45,73-75 and 93-97* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Election/Restrictions

1. Applicant's election of Group II for the groupings of invention and species B of Group I of species and species B of Group II of species in the reply filed on 4-7-06 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 1-34, 36-41, 79-92 and 98 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4-7-06.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 35, 46, 47, 63-71, and 76-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petzelka et al taken with Wilson et al, Satoh et al and any one of Benkoczy, Kuch et al, Hanson or French Patent 2516859.

Petrzelka et al. discloses a composite energy absorbing element in the form of a hollow body adapted to contact a fitting having a surface extending radially outward to cause progressive destruction of the element to absorb energy. Further, the element can have a varying thickness along its length to affect the force absorption

characteristics – note esp. fig. 4 and 5. Further, the thickened areas can be formed by winding additional material (note col. 4, lines 14-22) and thus clearly varying number of layers of reinforcement are contemplated. This reference does not however provide any more detail of how this structure is to be formed. The reference does not address whether one skilled in the art would have known to wind a sheet material with a varied width over the mandrel to form the composite energy absorbing article.

In forming similar composite energy absorbing structures, it is well known to employ a variety of composite forming techniques, including filament winding as well as winding or rolling flat reinforcing on the mandrel – note esp. col. 4, lines 10+; col. 10, lines 50+ and figs. 18a and 18b of Wilson et al. This reference further evidences the extensive knowledge of the artisan in selecting appropriate fiber orientations, materials and resins as well as characteristics of the fitting in achieving the desired energy absorption characteristics – note the entire reference. To form a composite energy absorbing structure consistent with Petrzelka et al. using wound layers of flat reinforcing material, more layers in the areas that are to be thicker, would therefore have been obvious and lead to only the expected results. Although it is considered to have been readily apparent to the artisan, the desire to select an appropriate configuration/reinforcement of the element to avoid buckling in such energy absorbing structures is considered to have been obvious to the ordinary artisan in light of Satoh et al. – note esp. col. 2, line 61 – col. 3, line 17. Note this reference also evidences an understanding in this art of the known use of a "triggering" chamfered configuration (col. 2, lines 45+). The references still do not depict the shape of the web utilized in the

winding procedure in order to provide a part with regions of greater thickness than those in other areas of the wound composite.

The references to any one of Benkoczy, Kuch et al, Hanson or French Patent 2516859 suggested that those skilled in the art of winding a sheet material would have understood how to vary the thickness of the finished composite along the axis of the same and that this would have been performed by provision of a web or sheet of composite material which had a varied width whereby portions of the sheet wound on the mandrel having the greatest width would have provided a region of reduced thickness as opposed to regions having a lesser width. These sheet winding techniques would have been obvious techniques for providing the regions of varied thickness in Petzelka et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the winding techniques of any one of Benkoczy, Kuch et al, Hanson or French Patent 2516859 to provide for the wound energy absorbing composite tube of Petzelka et al as the reference to Wilson et al suggested that such sheet winding techniques were well recognized as useful for forming such an energy absorbing tube wherein the materials would have been suitably selected to prevent buckling in the composite article as suggested by Satoh et al.

As to the winding of plural layers, it should be noted that the reference to Wilson clearly expressed that one skilled in the art would have rolled several preimpregnated fiber layers 108a-108c onto a mandrel to form the energy absorbing device. The specific number of layers utilized would have been selected by the ordinary artisan dependent upon the desired properties in the finished assembly. Additionally, the artisan would

have understood that these plural layers would have been cut or severed in a manner to provide the stepped arrangement suitable in Petzelka et al.

5. Claims 42 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with any one of Uchida, Pearce or Aldrich et al.

While the references as set forth above in paragraph 4 suggested the overall operation, they failed to teach that one skilled in the art would have understood to form multiple components simultaneously and severed the individually formed components from the assembly after formation of multiple components simultaneously. However, such was well known in the art of forming composite article manufacture as suggested by any one of Uchida, Pearce or Aldrich et al. In each of Pearce, Uchida and Aldrich et al the references suggested that those skilled in the art would have known to form plural components on configured mandrels and cured the composite material followed by separation of the components into individual components. Such would have been understood to increase the productivity of the operation. While the references to both Uchida and Aldrich et al are both related to braiding over the mandrel to form the articles, one skilled in the art would have understood that the winding of plural sheets simultaneously over a single configured mandrel followed by severing from the mandrel plural parts would have increased productivity and would have understood how to do the same with a wound sheet rather than in a braiding operation. Note that Pearce clearly envisioned that a winding operation would have been carried out in parallel. It would have been obvious to one of ordinary skill in the art at the time the invention was

made to wind a plurality of energy absorbing devices simultaneously wherein the plural sheets used to form the same would have been wound up edge to edge along the axis of the mandrel as the references to any one of Pearce, Uchida or Aldrich et al suggested that one skilled in the art would have understood that such manufacture in composite article manufacturing would have been desirable as a means to increase productivity in the process of making a composite energy absorbing device as set forth above in paragraph 4.

6. Claims 48-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with any one of Stephens, Fairbairn or French Patent 2,525,962.

The reference s as set forth above suggested that those skilled in the art at the time the invention was made would have wound the sheet material about a mandrel in the formation of the composite energy absorbing device. The references failed to teach that those skilled in the art would have employed a heated mandrel arrangement whereby the resin material would have been made liquid or flowable during the wrapping operation. However, those skilled in the art at the time the invention was made would have understood that it would have been within the purview of the ordinary artisan to do the same. The references to any one of Stephens, Fairbairn or French Patent 2,525,962 suggested that those skilled in the art would have incorporated a heated mandrel in a winding operation in order to facilitate compaction of the material on the mandrel (column 3, lines 36-40 of Stephens) as well as reduce the viscosity of the resin in the prepreg being wound (column 1, lines 25-35, column 3, lines 41-48,

column 4, lines 43-48 of Fairbairn for instance) and polymerize the resin in the preimpregnated material (French Patent '962, see the abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of any one of Stephens, Fairbairn or French Patent 2,525,962 to supply heat to the material and/or mandrel during the winding operation wherein the resin would have been rendered more viscous during the wrapping operation in the process as set forth above in paragraph 4.

7. Claims 58-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 6 further taken with any one of Goldsworthy, Yu et al, Miller or Zackrisson et al.

The references as set forth above suggested that one skilled in the art would have formed the energy absorbing tube on a single mandrel in a wrapping procedure, however there is no evidence as to how one would have carried out such a procedure in a mass production environment. However, it was well known in the art of winding and/or wrapping to wrap and/or wind plural mandrels which were attached to one another followed by setting of the resin in the impregnated material via heating in an oven for example followed by separation of the formed part from the mandrel and reuse of the mandrel at the start of the operation by reattachment of the mandrel to the start mandrel in the operation. the references to any one of Goldsworthy, Yu et al, Miller or Zackrisson et al evidence that it was notoriously well known at the time the invention was made to form the composite in a continuous operation wherein the material was wound on mandrels which were disposed and connected to each other followed by

separation of the individual parts and reuse of the mandrels as taught by any one of Goldsworthy, Yu et al, Miller or Zackrisson et al in order to mass produce the composite energy absorbing tubing.

Allowable Subject Matter

8. Claims 43-45, 73-75, and 93-97 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the prior art of record taught or suggested that one skilled in the art would have formed the energy absorbing component with a winding operation wherein plural plies were connected to one another and wound in parallel with one another relative to the axis of the mandrel.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
May 4, 2006